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# RESULTS OF PHASE ONE OF LAND USE INFORMATION DELPHI STUDY

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May 1, 1975

Prepared for  
**Land Use Management Information Systems Project**  
**Office of Applications**  
**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**

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# **RESULTS OF PHASE ONE OF LAND USE INFORMATION DELPHI STUDY**

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## **PREFACE**

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## CONTENTS

Title	Page
Introduction. . . . .	1
Phase One Methodology . . . . .	2
Summary of Results for Two Iterations . . . . .	4
Items Selected for Interpretation from Aerial Photographs. . . . .	4
Summary and Conclusions . . . . .	9

### APPENDIXES

I. List of Delphi Participants' Names . . . . .	11
II. Initial List of LUMIS Data Items . . . . .	15
III. Results of First Ranking of Land Use Information Variables . . . . .	25
IV. Results of Second Ranking of Land Use Information Variables . . . . .	31

### TABLES

1. Candidate cultural data items for final selection . . . . .	6
2. Candidate physical data items for final selection . . . . .	7
3. Data items excluded from final selection . . . . .	8

### FIGURES

1. Cultural data items — median scores, first iteration. . . . .	5
2. Cultural data items — median scores, second iteration . . . . .	5
3. Physical data items — median scores, first iteration . . . . .	5
4. Physical data items — median scores, second iteration . . . . .	5

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## ABSTRACT

The Land Use Management Information System (LUMIS) is being developed by the Jet Propulsion Laboratory (JPL) in cooperation with the Los Angeles City Planning Department, on a pilot basis, for the City portion of the Santa Monica Mountains. LUMIS incorporates data developed from maps and aerial photos as well as traditional land-based data associated with routine city and county record-keeping activities and traditional census data.

To achieve the merging of natural resource data with governmental data LUMIS is being designed in accordance with restrictions associated with two other land use information systems currently being constructed by Los Angeles City staff. The two City systems are LUPAMS (Land Use Planning and Management System) which is based on data recorded by the County Assessor's office for each individual parcel of land in the City, and Geo-BEDS, a geographically based environmental data system that utilizes US Census Bureau DIME file technology. The latter incorporates numerous local, regional, and federal data files at the first level of urban geographic aggregation--the individual census block.

RESULTS OF PHASE ONE  
OF  
LAND USE INFORMATION DELPHI STUDY

Introduction

The Land Use Management Information System (LUMIS) Staff established both a User Advisory Committee and a Technical Advisory Committee in June 1974. Both committees were convened at the Jet Propulsion Laboratory to initiate the Delphi study reported herein and to ascertain whether any members of these committees had had any experience with land use data and information systems in the Santa Monica Mountains. As a result of the meager information available, the LUMIS staff embarked on a statistical method of deriving significant land use informational needs in the Santa Monica Mountains.

In light of hundreds of possible data items that could be interpreted from aerial photographs of an urban area, the LUMIS project staff decided to undertake a four-phase Delphi study in an effort to determine what were the most important land use data items to be interpreted from the remotely sensed imagery. Delphi is a technique that in one form involves a panel of subject matter experts who are unknown to one another and who are not convened. Usually a traditional questionnaire of some sort is developed and administered to the group.

The goal of this process is to seek group consensus regarding some set of choices. The "blind" committee is formed to minimize the impact of individual personalities on the overall group judgment. A typical Delphi exercise usually consists of two or more iterations of administering the same questionnaire. Each successive administration of the questionnaire is accompanied with appropriate statistics describing the group's previous performance. The group is then asked if they wish to modify their previous responses.

The partial Delphi study reported here was designed to be implemented in four phases. Phases one and two were to consist of two iterations each; phase three was to deal with a single cost evaluation; and phase four was to be the point at which project management enumerated the items to be taken from the imagery for inclusion in the LUMIS data base. This plan has been somewhat modified because of time constraints. However, the design is reported here because it is hoped to be completed at a later date.

Phase one was a ranking of data items, supplied to the Delphi reviewers by the project staff, as to their relative importance. Two iterations were undertaken. Phase two was to take these ranked data items and return them to the reviewers, this time seeking to determine at what level of detail or scale each data item needed to be recorded.

Phase three was to involve developing a summary sheet of the results of phases one and two showing the relative importance of each data item, and the scale at which each was needed. This was to be passed to the photo interpretation team leader who in turn would have judged the feasibility of obtaining each data item at the desired scale and would have indicated the relative cost of acquiring it. The management decision phase, phase four, required that project management render a decision as to which items were most important for inclusion in the LUMIS data base, given their relative collection costs and stated levels of importance.

### Phase One Methodology

At a meeting of the LUMIS Technical Subcommittee the idea of the Delphi study was advanced by the project staff and approved by the Committee. They were asked if the Delphi procedure itself should involve the "blind" panel of experts in the construction of an initial list of data items. The idea was suggested to the project staff by the subcommittee that they construct an initial list of data items and submit this to the expert panel for their review as to its completeness. The Delphi panel is identified in Appendix I and consisted of members of the LUMIS Users Advisory Committee and Technical Subcommittee. An initial list was then constructed of data items believed to be of potential interest to users (Appendix II). The list of items was broadly divided into

two categories of cultural and physical data items. These two major categories were subsequently broken down into appropriate subcategories.

The project panel was then asked to review the list of data items and return any suggestions for its modification. Approximately three working weeks were allowed the panel to respond. Several constructive commentaries were received. The list of suggested data items was then modified to incorporate the panel's suggestions, and a second list of data items was constructed that would also serve as the first iteration rating form.

The newly developed form was then mailed to the expert panel and they, in turn, rated each item as to the importance it held for various operations within their organization. These forms were sent by return mail to the LUMIS staff, where they were tallied, and a frequency distribution constructed for each item along with the determination of its median score.

The results of these rankings were reported using the rating form layout. (Appendix III). This report of the first ranking of the final land use data items and a second copy of the rating form were returned to the panel. In this second iteration of the Delphi process the participants were asked that they again review the list as to each data item's importance to the individual organization's operations and to indicate that importance by checking off the space corresponding to the appropriate importance level.

This iteration differed from the previous one inasmuch as the committee members were supplied with a report that showed how their fellow Delphi participants had ranked the importance of the land use information variables in the first round. Also in the second rating of variables they were invited to change their rating of variables, if they so desired, based on information contained in the report.

Again the questionnaires were returned by mail and the LUMIS staff constructed a summary report of responses, their frequency distribution and median score (Appendix IV). It was decided to limit our particular Delphi exercise to two iterations due to the limited duration of the project and the need to begin interpreting photography.

### Summary of Results for Two Iterations

Summary frequency distributions were constructed to illustrate overall importance of variables as rated by the panel of experts. Four such distributions were constructed, one each for the gross categories of cultural and physical data items for both the first and second iterations.

The degree of convergence or agreement within the Delphi panel on the overall importance level of the various cultural data items is shown in Figures 1 and 2. Figure 1 is a frequency distribution of the median scores for each of the 86 cultural data items from the first iteration, as shown in Appendix III.

Figure 2 is a similar distribution of median scores for cultural data items, but for the second iteration results as shown in Appendix IV.

Two more distributions of median scores were constructed for the physical data items, one for each Delphi iteration. Figure 3 illustrates the results of the first iteration, and Figure 4 the results of the second iteration.

### Items Selected for Interpretation from Aerial Photographs

Figures 2 and 4 were used to determine candidate items from which the final data items to be interpreted from the aerial photographs would be selected. Thirty-nine cultural data items and fifty-four physical data items were advanced to selection candidacy. Cultural items with a second iteration median score of seven or lower were excluded from consideration as were physical data items with a second iteration median score of 8.5 or lower.

The cultural items selected for final consideration are shown in Table 1, and the physical data items are shown in Table 2.

The data items in Tables 1 and 2 were then reviewed by the LUMIS staff and certain of them were initially excluded from the final list of data items to be forwarded to the photo interpretation team for their consideration. These items were removed because in the judgment of the LUMIS staff aerial photography did not seem an appropriate data source. Those excluded items are shown in Table 3.

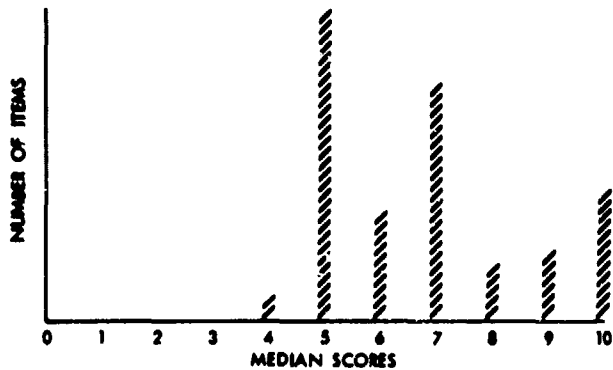


Fig. 1. Cultural data items – median scores, first iteration

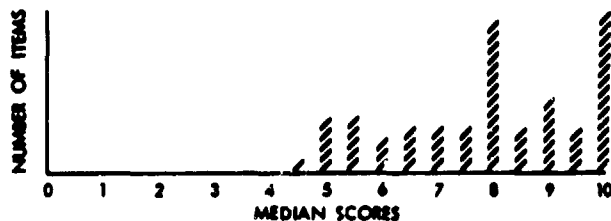


Fig. 3. Physical data items – median scores, first iteration

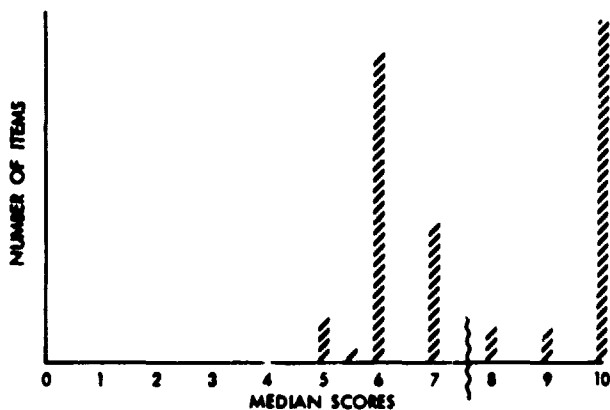


Fig. 2. Cultural data items – median scores, second iteration

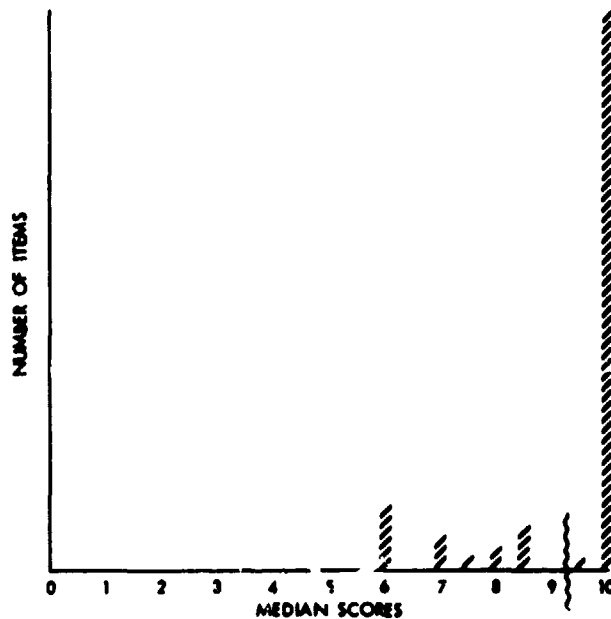


Fig. 4. Physical data items – median scores, second iteration

Table 1. Candidate cultural data items for final selection

<u>1.0 RESIDENTIAL</u>	
1.1	Household units
1.2	Group quarters
1.3	Residential hotels
1.4	Mobile home parks or courts
1.6	Other residential
<u>4.0 TRANSPORTATION, COMMUNICATION, AND UTILITIES</u>	
4.1	Railroad, rapid rail transit and street railway transportation
4.2	Motor vehicle transportation
4.3	Aircraft transportation
4.4	Marine craft transportation
4.5	Highway and street right-of-way
4.6	Automobile parking
4.7	Communication
4.8	Utilities
4.9	Other transportation
4.10	Bike path right-of-way
<u>7.0 CULTURAL, ENTERTAINMENT AND RECREATIONAL</u>	
7.2	Public assembly
7.3	Amusements
7.4	Recreational activities
7.5	Resorts and group camps
7.6	Parks
7.10	Theme parks
7.11	Marinas
<u>8.0 RESOURCE PRODUCTION AND EXTRACTION</u>	
8.5	Refining activities and related services
8.6	Mining activities and related services
8.9	Other resource production and extraction
<u>9.0 UNDERDEVELOPED LAND AND WATER AREAS</u>	
9.1	Underdeveloped and unused land area
9.2	Noncommercial forest development
9.3	Water areas
9.4	Vacant floor area
9.5	Under construction
9.9	Other underdeveloped land and water areas
<u>10.0 PUBLIC FACILITIES</u>	
10.1	Fire protection
10.2	Police protection
10.3	Flood control
10.4	Municipal water district
10.5	Waste water disposal
10.6	Solid waste disposal
10.7	Educational facilities
10.8	Pipelines
10.11	Electric and gas utilities

Table 2. Candidate physical data items for final selection

<u>1.0 CLIMATE ON SEASONAL BASES</u>		4.15 Shoreline quality
1.1 Air quality/types of pollutants		4.16 Water feature
1.2 Wind characteristics		
<u>2.0 GEOLOGY</u>		<u>5.0 PEDOLOGY</u>
2.1 Fractures		5.1 Soil porosity
2.2 Types of sand and rock		5.2 Soil types
2.3 Bedrock out crops		5.5 Erosion factor
2.4 Bedrock type		
2.5 Depth of bedrock		<u>6.0 VEGETATION</u>
<u>3.0 PHYSIOGRAPHY</u>		6.1 Coastal sage scrub
3.3 Fault		6.2 Chaparral
3.5 Elevation		6.3 Dry forest
3.6 Slope		6.4 Montane coniferous forest
3.7 Drainage		6.5 Desert woodland
3.8 Landform type		6.6 High desert vegetation
3.9 Scenic quality		6.7 Grasslands
		6.8 Barren
		6.9 Riverine vegetation
<u>4.0 HYDROLOGY</u>		<u>8.0 OTHER IMPORTANT CHARACTERISTICS</u>
4.1 Fresh water supply		8.1 Natural and man-made edges and barriers
4.2 Water sheds		8.2 Aesthetic value
4.3 Aquifers		
4.4 Drainage basins		<u>9.0 SPECIALIZED PHYSICAL DATA PLAN MAP AREAS</u>
4.5 Lakes		9.1 Mountain fire districts
4.6 Rivers, streams		9.2 Mineral resources
4.7 Wetlands		9.3 Inundation areas
4.8 Springs		9.4 Flood areas
4.9 Waterfalls		9.5 Erosion hazards
4.10 Flood (potential)		9.6 Soil liquefaction hazard areas
4.11 Water quantity		9.7 Shaking hazard areas
4.12 Water quality		9.8 Ecologically important areas
4.13 Dissolved and suspended solids		9.9 Air pollution potential areas
4.14 Shoreline type (use)		9.10 Water pollution potential areas
		9.11 Noise pollution potential areas

Table 3. Data items excluded from final selection list

<u>Cultural data items</u>	
1.	Vacant floor area
<u>Physical data items</u>	
1.	Air quality
2.	Wind characteristics
3.	Mountain fire districts

Those items shown in Table 3, although excluded as data items to be considered for retrieval from aerial photos, have not been excluded from consideration for inclusion in the overall LUMIS effort. Rather, alternative data sources will need to be considered for those items. In the case of vacant floor area the Los Angeles City Planning Department may wish to conduct unique field surveys and append that data to their Geo-BEDS data file. Maps of meteorological data will have to be developed to define areas of air quality as well as wind characteristics, and they in turn will need to be digitized for inclusion in the LUMIS data base. Similar mapping and digitizing procedures will have to be instituted to define administrative or planning zones such as mountain fire districts.

A careful review of Tables 1 and 2 will reveal other data items that may be questionable as to their availability from aerial photography. However it should be stressed that this list will subsequently be reviewed by the photo interpretation team leader who will also make a judgment as to the appropriateness of aerial photography as being a data source for the listed items. The LUMIS staff decided to retain in its list of items any that seemed plausible if not practical for development from aerial photography, in its knowledge that the list would be subjected to further review.

### Summary and Conclusions

The Delphi procedure has been used to construct a list of data items appropriate for interpretation from aerial photography for inclusion in the LUMIS process. The next step will be to submit this list of items along with photography for the Santa Monica Mountains to a photo interpretation team. The list will probably shrink somewhat when the decision is made to construct actual map models from the interpreted aerial photos.

Originally, it was intended that a list of data items would not be submitted to the interpretation team until appropriate geographical scales had been determined through a second phase of the Delphi process. This consideration has been deferred. However, the determination of a scale requirement for the data items will be undertaken on an experimental basis. It is hoped that the second phase of this study will prove beneficial to future LUMIS users who anticipate flying new photography for their study area.

**APPENDIX I**  
**LIST OF DELPHI PARTICIPANTS' NAMES**

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**APPENDIX II**  
**INITIAL LIST OF LUMIS DATA ITEMS**

## LAND USE MANAGEMENT INFORMATION SYSTEM

(LUMIS)

### A Proposed List of Data Items for Inclusion in the System

- I. Cultural Data Items (These items represent man-oriented activities, structures, or modifications visible on the landscape.)\*

#### 1.0 RESIDENTIAL

- 1.1 Household units
- 1.2 Group quarters
- 1.3 Residential hotels
- 1.4 Mobile home parks or courts
- 1.5 Transient lodgings
- 1.6 Other residential, NEC\*\*

#### 2.0 MANUFACTURING

- 2.1 Food and kindred products — manufacturing
- 2.2 Textile mill products — manufacturing
- 2.3 Apparel and other finished products made from fabrics, leather, and similar materials — manufacturing
- 2.4 Lumber and wood products (except furniture) — manufacturing
- 2.5 Furniture and fixtures — manufacturing

\*Refer to U.S. Urban Renewal Administration and Bureau of Public Roads, Standard Land Use Coding Manual (Washington: 1965), for more detailed descriptions of land use activities within each of these classifications. Where possible LUMIS Staff will use the extremely detailed (fourth digit) classification identified from the aerial photography and other data sources. However, our listing here has been kept to just the more gross two digit classification level for purposes of determining the relative importance of types of data items to our users.

\*\*NEC = not exclusively coded.

LUMIS (cont.)

- 2.6 Paper and allied products — manufacturing
- 2.7 Printing, publishing, and allied industries
- 2.8 Chemical and allied products
- 2.9 Petroleum refining and related industries
- 3.0 MANUFACTURING (cont.)
  - 3.1 Rubber and miscellaneous plastic products
  - 3.2 Stone, clay, and glass products — manufacturing
  - 3.3 Primary metal industries
  - 3.4 Fabricated metal products — manufacturing
  - 3.5 Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks-manufacturing
  - 3.9 Miscellaneous manufacturing, NEC\*

4.0 TRANSPORTATION, COMMUNICATION, AND UTILITIES

- 4.1 Railroad, rapid rail transit, and street railway transportation
- 4.2 Motor vehicle transportation
- 4.3 Aircraft transportation
- 4.4 Marine craft transportation
- 4.5 Highway and street right-of-way
- 4.6 Automobile parking
- 4.7 Communication
- 4.8 Utilities
- 4.9 Other transportation, communication, and utilities, NEC\*

\*NEC = not exclusively coded.

LUMIS (cont.)

5.0 TRADE

- 5.1 Wholesale trade
- 5.2 Retail trade—building materials, hardware, and farm equipment
- 5.3 Retail trade—general merchandise
- 5.4 Retail trade—food
- 5.5 Retail trade—automotive, marine craft, aircraft, and accessories
- 5.6 Retail trade—apparel and accessories
- 5.7 Retail trade—furniture, home furnishings, and equipment
- 5.8 Retail trade—eating and drinking
- 5.9 Other retail trade, NEC\*

6.0 SERVICES

- 6.1 Finance, insurance, and real estate services
- 6.2 Personal services
- 6.3 Business services
- 6.4 Repair services
- 6.5 Professional services
- 6.6 Contract construction services
- 6.7 Government services
- 6.8 Educational services
- 6.9 Miscellaneous services

\*NEC = not exclusively coded.

LUMIS (cont.)

7.0 CULTURAL, ENTERTAINMENT, AND RECREATIONAL

- 7.1 Cultural activities and nature exhibitions
- 7.2 Public assembly
- 7.3 Amusements
- 7.4 Recreational activities
- 7.5 Resorts and group camps
- 7.6 Parks
- 7.9 Other cultural, entertainment, and recreational, NEC\*

8.0 RESOURCE PRODUCTION AND EXTRACTION

- 8.1 Agriculture
- 8.2 Agricultural related activities
- 8.3 Forestry activities and related services
- 8.4 Fishing activities and related services
- 8.5 Refining activities and related services
- 8.6 Mining activities and related services
- 8.9 Other resource production and extraction, NEC\*

9.0 UNDERDEVELOPED LAND AND WATER AREAS

- 9.1 Underdeveloped and unused land area (excluding noncommercial forest development)
- 9.2 Noncommercial forest development
- 9.3 Water areas
- 9.4 Vacant floor area
- 9.5 Under construction
- 9.9 Other underdeveloped land and water areas, NEC\*

\*NEC = not exclusively coded.

LUMIS (cont. )

10.0 PUBLIC FACILITIES

- 10.1 Fire protection
- 10.2 Police protection
- 10.3 Flood control
- 10.4 Municipal water district
- 10.5 Waste water disposal (Liquid sewage treatment)
- 10.6 Solid waste disposal (Land fill, etc.)
- 10.7 Educational facilities
- 10.8 Pipelines
- 10.9 Observatory
- 10.10 Museum
- 10.11 Electric and gas utilities
- 10.12 Other public facilities, NEC\*

20

II. Physical Data Items (These items represent those used to describe the natural environment: )

1.0 CLIMATE ON SEASONAL BASES

- 1.1 Air quality/types of pollutants
- 1.2 Wind characteristics
- 1.3 Solar micro climate
- 1.4 Cloud cover
- 1.5 Precipitation
- 1.6 Fog
- 1.7 Temperature

\*NEC = not exclusively coded.

## **LUMIS (cont.)**

### **2.0 GEOLOGY**

- 2.1 Anticlines**
- 2.2 Synclines**
- 2.3 Fractures**
- 2.4 Lineaments**
- 2.5 Faults**
- 2.6 Beaches**
- 2.7 Types of sand and rock**
- 2.8 Sand dunes**
- 2.9 Bedrock outcrops**
- 2.10 Bedrock type**
- 2.11 Unique formations**
- 2.12 Depth of bedrock**
- 2.13 Structural type**
- 2.14 Structural age**
- 2.15 Elevation**
- 2.16 Slope**
- 2.17 Orientation**

### **3.0 PHYSIOGRAPHY**

- 3.1 Surface drainage**
- 3.2 Land features (valleys, hills, mountains)**
- 3.3 Water features (of scenic value)**
- 3.4 Slope**

## LUMIS (cont.)

### 4.0 HYDROLOGY

- 4.1 Fresh water supply
- 4.2 Water sheds
- 4.3 Aquifers
- 4.4 Drainage basins
- 4.5 Lakes
- 4.6 Rivers, streams
- 4.7 Wetlands
- 4.8 Springs
- 4.9 Waterfalls
- 4.10 Flood (potential)
- 4.11 Water quantity
- 4.12 Water quality
- 4.13 Dissolved and suspended solids
- 4.14 Shoreline type (use)
- 4.15 Shoreline quality

### 5.0 PEDOLOGY

- 5.1 Soil porosity
- 5.2 Soil types
- 5.3 Soil depth
- 5.4 Foundation condition
- 5.5 Erosion factor

LUMIS (cont.)

6.0 VEGETATION

- 6.1 Grass types
- 6.2 Brush types
- 6.3 Tree types

7.0 WILD LIFE ON SEASONAL BASES

- 7.1 Mammals
- 7.2 Birds
- 7.3 Reptiles
- 7.4 Insects
- 7.5 Marine life (fish, etc.)

8.0 OTHER IMPORTANT CHARACTERISTICS

- 8.1 Natural and man-made edges and barriers
- 8.2 Aesthetic value
- 8.3 Noise

**APPENDIX III**  
**RESULTS OF FIRST RANKING OF LAND USE**  
**INFORMATION VARIABLES**

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**LAND USE MANAGEMENT INFORMATION SYSTEM  
(LUMIS)**

**A Possible List of Data Items for Possible Inclusion in the System**

**1. Cultural Data Items** (These items represent man oriented activities, structures, or modifications visible on the landscape.)\*

		Importance Levels										
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	#
<b>1.0 RESIDENTIAL</b>	<b>MEDIAN</b>											
1.1 Household units	10				L						III	10
1.2 Group quarters	9				L		L		L		III	11
1.3 Residential hotels	8				L	L	L		L		III	11
1.4 Mobile home parks or courts	10				L		L		L		III	11
1.5 Transient lodgings	7				L		III		L		III	11
1.6 Other residential, NEC*	9				L		L		L		III	10
<b>2.0 MANUFACTURING</b>												
2.1 Food & kindred products-manufacturing	6				L	L	L		L		L	11
2.2 Textile mill products-manufacturing	5				L	III	L		L			11
2.3 Apparel & other finished products made from fabrics, leather, and similar materials-manufacturing	6				L	III	L		III		L	11
2.4 Lumber & wood products (except furniture)-manufacturing	6				L	III	L		L		L	11
2.5 Furniture & fixtures-manufacturing	6				L	III	L		III		L	10
2.6 Paper & allied products-manufacturing	6				L	III	L		L		L	11
2.7 Printing, publishing, & allied industries	5				L	III	L		L		L	11

\*NOTE: Refer to, U.S. Urban Renewal Administration & Bureau of Public Roads, **Standard Land Use Coding Manual** (Washington: The Bureau, 1965), for more detailed descriptions of land use activities within each of these classifications. Where possible LUMIS Staff will use the extremely detailed (fourth digit) classification identified from the aerial photography & other data sources. However, our listing here has been kept to just the more gross two digit classification level for purposes of determining the relative importance of types of data items to our users. (NEC=Not exclusively coded)

**LUMIS (cont.)**

		Importance Levels										
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	#
2.8 Chemical & allied products	5			L		L	L		L		L	9
2.9 Petroleum refining and related industries	6			L		L	L		L		L	9
<b>3.0 MANUFACTURING (cont.)</b>												
3.1 Rubber & miscellaneous plastic products	5	L		L		L	L		L		L	9
3.2 Stone, clay, & glass products-manufacturing	5	L		L		L	L		L		L	9
3.3 Primary metal industries	6	L		L		L	L		L		L	9
3.4 Fabricated metal products-manufacturing	5	L		L		L	L		L		L	9
3.5 Professional, scientific, & controlling instruments; photographic & optical goods; watches & clocks-manufacturing	5	L		L		L	L		L		L	9
3.9 Miscellaneous manufacturing NEC*	5	L		L		L	L		L		L	9
<b>4.0 TRANSPORTATION, COMMUNICATION, &amp; UTILITIES</b>												
4.1 Railroad, rapid rail transit, & street railway transportation	10			L		L			L		III	9
4.2 Motor vehicle transportation	10			L		L			L		III	9
4.3 Aircraft transportation	8			L					L		III	9
4.4 Marine craft transportation	4		L	III		L					III	9
4.5 Highway & street right-of-way	9			L		L	L		L		L	9
4.6 Automobile parking	10			L		L			L		III	9
4.7 Communication	7			L		L			L		III	9
4.8 Utilities	10			L		L			L		III	9
4.9 Other transportation, communication, & utilities, NEC*	5			L		L			L		III	9
4.10 Bike path right-of-way	7			L		L			L		III	9

\*NEC = Not exclusively coded

## LUMIS (cont.)

LANKIS (cont.)		Importance Levels										N
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	
5.0	TRADE	MEDIAN										
5.1	Wholesale trade	6	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.2	Retail trade-building materials, hardware, & farm equipment	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.3	Retail trade-general merchandise	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.4	Retail trade-food	6	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.5	Retail trade-automotive, marine craft, aircraft, & accessories	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.6	Retail trade-clothing & accessories	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.7	Retail trade-furniture, home furnishing, and equipment	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.8	Retail trade-eating & drinking	6	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
5.9	Other retail trade, NEC*	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.0	SERVICES											
6.1	Finance, insurance, & real estate services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.2	Personal services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.3	Business services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.4	Repair services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.5	Professional services	4	_____	_____	_____	_____	_____	_____	_____	_____	_____	2
6.6	Contract construction services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	8
6.7	Governmental services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.8	Educational services	7	_____	_____	_____	_____	_____	_____	_____	_____	_____	9
6.9	Miscellaneous services	5	_____	_____	_____	_____	_____	_____	_____	_____	_____	9

## LUMIS (cont.)

LUNDS (cont.)	MEDIAN	Importance Levels										N
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	
7.0 <u>CULTURAL, ENTERTAINMENT, &amp; RECREATIONAL</u>												
7.1 Cultural activities & nature exhibitions	7	___	___	___	___	___	___	___	___	___	___	9
7.2 Public assembly	9	___	___	___	___	___	___	___	___	___	___	9
7.3 Amusements	7	___	___	___	___	___	___	___	___	___	___	9
7.4 Recreational activities	8	___	___	___	___	___	___	___	___	___	___	9
7.5 Resorts & group camps	10	___	___	___	___	___	___	___	___	___	___	9
7.6 Parks	10	___	___	___	___	___	___	___	___	___	___	9
7.9 Other cultural, entertainment, & recreational, NEC*	7	___	___	___	___	___	___	___	___	___	___	9
7.10 Theme Parks	7	___	___	___	___	___	___	___	___	___	___	9
7.11 Marinas	9	___	___	___	___	___	___	___	___	___	___	9
8.0 <u>RESOURCE PRODUCTION AND EXTRACTION</u>												
8.1 Agriculture (irrigated and non-irrigated)	7	___	___	___	___	___	___	___	___	___	___	9
8.2 Agricultural related activities	7	___	___	___	___	___	___	___	___	___	___	9
8.3 Forestry activities & related services	6	___	___	___	___	___	___	___	___	___	___	9
8.4 Fishing activities & related services	6	___	___	___	___	___	___	___	___	___	___	9
8.5 Refining activities & related services	7	___	___	___	___	___	___	___	___	___	___	5
8.6 Mining activities & related services	7	___	___	___	___	___	___	___	___	___	___	9
8.9 Other resource production & extraction NEC*	7	___	___	___	___	___	___	___	___	___	___	9
9.0 <u>UNDERDEVELOPED LAND AND WATER AREAS</u>												
9.1 Underdeveloped & unused land area (excluding noncommercial forest development)	10	___	___	___	___	___	___	___	___	___	___	9
9.2 Noncommercial forest development	9	___	___	___	___	___	___	___	___	___	___	9

\*NEC = Not exclusively coded

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## LUMIS (cont.)

LUMIS (cont.)		Importance Levels											
		Not Important			Important			Very Important				N	
	MEDIAN	1	2	3	4	5	6	7	8	9	10		
5.0 <u>TRADE</u>													
5.1 Wholesale trade	6	└	—	└└	—	└	└└	└	—	—	└└	9	
5.2 Retail trade-building materials, hardware, & farm equipment	5	—	└	└└	—	└└	└└	└	—	—	└	9	
5.3 Retail trade-general merchandise	5	—	—	└└└	—	└	└	└└	—	—	└	9	
5.4 Retail trade-food	6	—	—	└	—	└	└└	└└	—	—	└	9	
5.5 Retail trade-automotive, marine craft, aircraft, & accessories	5	—	└	└└	—	└	└	└└	—	—	└	9	
5.6 Retail trade-apparel & accessories	5	└	—	└└	—	└└	—	└└	—	—	└	9	
5.7 Retail trade-furniture, home furnishing, and equipment	5	└	—	└└	—	└└	└└	└	—	—	└	9	
5.8 Retail trade-eating & drinking	6	—	—	└└	—	└	└└	└└└	—	—	└	9	
5.9 Other retail trade, NEC*	5	└	—	└└	—	└└	└└	└	—	—	└	9	
6.0 <u>SERVICES</u>													
6.1 Finance, insurance, & real estate services	5	└	—	└└	—	└└	—	└└	—	—	└└	9	
6.2 Personal services	5	—	—	└└	—	└└└	└	└└	—	—	└	9	
6.3 Business services	5	└	—	└└	—	└└	└	└└	—	—	└	9	
6.4 Repair services	5	—	—	└└	—	└└└	—	└	└└	—	└	9	
6.5 Professional services	4	└	—	—	—	—	—	└	—	—	—	2	
6.6 Contract construction services	5	└	—	└└	—	└└	└	└	—	—	└	8	
6.7 Governmental services	5	—	—	└└	—	└└	└	—	—	—	└└	9	
6.8 Educational services	7	—	—	└└	—	└	—	└└	└	—	└└	9	
6.9 Miscellaneous services	5	└	—	└└	—	└└	└	└└	—	—	└	9	

## LUMIS (cont.)

		Importance Levels											
		Not	Important			Important			Very Important				
		MEDIAN	1	2	3	4	5	6	7	8	9	10	N
7.0	<u>CULTURAL, ENTERTAINMENT, &amp; RECREATIONAL</u>												
7.1	Cultural activities & nature exhibitions	7	—	—	—	—	—	—	—	—	—	—	9
7.2	Public assembly	9	—	—	—	—	—	—	—	—	—	—	9
7.3	Amusements	7	—	—	—	—	—	—	—	—	—	—	9
7.4	Recreational activities	8	—	—	—	—	—	—	—	—	—	—	9
7.5	Resorts & group camps	10	—	—	—	—	—	—	—	—	—	—	9
7.6	Parks	10	—	—	—	—	—	—	—	—	—	—	9
7.9	Other cultural, entertainment, & recreational, NEC*	7	—	—	—	—	—	—	—	—	—	—	9
7.10	Theme Parks	7	—	—	—	—	—	—	—	—	—	—	9
7.11	Marinas	9	—	—	—	—	—	—	—	—	—	—	9
8.0	<u>RESOURCE PRODUCTION AND EXTRACTION</u>												
8.1	Agriculture (irrigated and non-irrigated)	7	—	—	—	—	—	—	—	—	—	—	9
8.2	Agricultural related activities	7	—	—	—	—	—	—	—	—	—	—	9
8.3	Forestry activities & related services	6	—	—	—	—	—	—	—	—	—	—	9
8.4	Fishing activities & related services	6	—	—	—	—	—	—	—	—	—	—	9
8.5	Refining activities & related services	7	—	—	—	—	—	—	—	—	—	—	5
8.6	Mining activities & related services	7	—	—	—	—	—	—	—	—	—	—	9
8.9	Other resource production & extraction NEC*	7	—	—	—	—	—	—	—	—	—	—	9
9.0	<u>UNDERDEVELOPED LAND AND WATER AREAS</u>												
9.1	Underdeveloped & unused land area (excluding noncommercial forest development)	10	—	—	—	—	—	—	—	—	—	—	9
9.2	Noncommercial forest development	9	—	—	—	—	—	—	—	—	—	—	9

\*NEC = Not exclusively coded

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## LUMIS (cont.)

LUMES (cont.)	MEDIAN	Importance Levels										N
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	
9.3 Water areas	9			L		L		L	L	L	III	9
9.4 Vacant floor area	7	L		L			L	II			III	9
9.5 Under construction	6			II		II	L	L			III	9
9.9 Other underdeveloped land & water areas, MEC*	9			L			L	L		L	III	9
<b>10.0 PUBLIC FACILITIES</b>												
10.1 Fire protection	8				L	L		II	L		III	9
10.2 Police protection	7				L	L	L	II			III	9
10.3 Flood control	7			L			L	II			III	9
10.4 Municipal water district	10				L			II			III	9
10.5 Waste water disposal (Liquid salvage treatment)	10						L	II			III	9
10.6 Solid waste disposal (Land fill, etc.)	10				L			II			III	9
10.7 Educational facilities	10					L	L	II			III	9
10.8 Pipelines	7		II	L	L			II			III	9
10.9 Observatory	5		II	II			II	II	L			9
10.10 Museum	5		II	II			II	II	L			9
10.11 Electric & gas utilities	7		L	L			L	II	L		III	9
10.12 Other public facilities, MEC*	7		L	L	L			III			III	9
10.13 Arboretum/Botanical Garden	7		L	II			L	II	L	L		9
10.14 Vista Points and Roadside Rests	5			II	L	II		L	L		II	9
10.15 Hostels	6		L	L	L	L	L	II	L			9

## II. Physical Data Items (These items represent those used to describe the natural environment.)

## 1.0 CLIMATE ON SEASONAL BASES

1.1 Air quality/Types of pollutants			L		L	L		L			III	10
1.2 Wind characteristics	8.3			L		L	L	L	L	L	III	10
1.3 Solar micro climate	5.3		L	L		L	L		L		III	9

## LUMIS (cont.)

LUMIS (cont.)		Importance Levels										
		Not Important			Important			Very Important				
	MEDIAN	1	2	3	4	5	6	7	8	9	10	N
1.4 Cloud cover	6.5	L		L	L		L	L	L			10
1.5 Precipitation	7.5			L	L			L	L		L	10
1.6 Fog	7.5			L	L		L	L	L		L	10
1.7 Temperature	6.5	L		L		L	L	L	L		L	10
2.0 <u>GEOLOGY</u>												
2.1 Fractures	9.5		L	L		L				L	L	10
2.2 Types of sand & rock	4.5		L	L	L	L					L	10
2.3 Bedrock outcrops	6			L		L		L	L		L	10
2.4 Bedrock type	5		L	L		L	L				L	10
2.5 Depth of bedrock	5.5			L		L	L		L		L	10
3.0 <u>PHYSIOGRAPHY</u>												
3.1 Anticline	5.5		L	L		L	L		L		L	10
3.2 Syncline	5.5		L	L		L	L		L		L	10
3.3 Fault	10		L	L							L	10
3.4 Limestone	7.5		L	L		L	L		L		L	10
3.5 Elevation	7		L	L		L	L		L		L	10
3.6 Slope	10			L			L		L		L	10
3.7 Drainage	10			L			L		L		L	9
3.8 Landform type	10		L	L		L					L	10
3.9 Scenic quality	8.5		L	L				L			L	10
3.10 Aspect	10		L	L					L		L	9
4.0 <u>HYDROLOGY</u>												
4.1 Fresh water supply	10			L						L	L	10
4.2 Water sheds	9			L					L	L	L	9
4.3 Aquifers	9.5			L				L	L	L	L	10
4.4 Drainage basins	9			L					L	L	L	10
4.5 Lakes	9.5			L		L			L	L	L	10

MEC = Not conclusively coded

## LUMIS (cont.)

	MEDIAN	Not Important			Importance Levels Important			Very Important			N
		1	2	3	4	5	6	7	8	9	
4.6 Rivers, streams	7.5			///			///	///	///	///	10
4.7 Wetlands	8			///	///	///	///	///	///	///	10
4.8 Springs	8			///				///	///	///	10
4.9 Waterfalls	7			///				///	///	///	10
4.10 Flood (potential)	10			///						///	10
4.11 Water quantity	9			///				///	///	///	10
4.12 Water quality	10			///				///	///	///	9
4.13 Dissolved & suspended solids	8			///				///	///	///	9
4.14 Shoreline type (use)	8.5			///				///	///	///	10
4.15 Shoreline quality	10			///	///	///	///			///	10
4.16 Water feature	9.5			///				///	///	///	8
<b>5.0 GEOLOGY</b>											
5.1 Soil porosity	7			///		///	///	///		///	10
5.2 Soil types	6			///	///	///	///	///		///	10
5.3 Soil depth	6			///		///	///	///		///	10
5.4 Foundation condition	7		///	///				///		///	9
5.5 Erosion factor	9			///		///	///	///		///	10
<b>6.0 VEGETATION</b>											
6.1 Coastal sage scrub	8			///		///	///	///	///	///	10
6.2 Chaparral	8			///		///	///	///	///	///	10
6.3 Dry forest	8			///		///	///	///	///	///	10
6.4 Montane coniferous forest	8			///		///	///	///	///	///	10
6.5 Desert woodland	8			///		///	///	///	///	///	10
6.6 High desert vegetation	8			///		///	///	///	///	///	10
6.7 Grasslands	8			///		///	///	///	///	///	10
6.8 Barren	8			///		///	///	///	///	///	10
6.9 Riverine vegetation	8			///		///	///	///	///	///	10

## LUMIS (cont.)

	Importance Levels										N	
	Not Important			Important			Very Important					
	MEDIAN	1	2	3	4	5	6	7	8	9		10
<b>7.0 <u>WILD LIFE ON SEASONAL BASES</u></b>												
7.1 Mammals	5	—	—	///	///	///	///	—	///	///	///	10
7.2 Birds	5	—	—	///	///	///	///	—	///	///	///	10
7.3 Reptiles	5	—	—	///	///	///	///	—	///	///	///	10
7.4 Insects	5	—	—	///	///	///	///	—	///	///	///	9
7.5 Marine life (fish, etc.)	6.5	—	—	///	///	///	///	—	///	///	///	10
<b>8.0 <u>OTHER IMPORTANT CHARACTERISTICS</u></b>												
8.1 Natural & man made edges & barriers	8	—	—	—	///	///	///	///	—	///	///	10
8.2 Aesthetic value	6.5	—	—	///	///	///	///	///	—	///	///	10
<b>9.0 <u>SPECIALIZED PHYSICAL DATA</u></b>												
<b><u>PLAN MAP AREAS</u></b>												
9.1 Mountain fire districts	9	—	///	///	—	—	///	—	///	—	///	10
9.2 Mineral resources	5.5	—	///	///	—	///	///	—	///	///	///	10
9.3 Inundation areas	8	—	—	///	—	—	—	///	///	—	///	9
9.4 Flood areas	10	—	—	///	—	—	—	///	///	—	///	9
9.5 Erosion hazards	10	—	—	///	—	—	—	///	///	—	///	10
9.6 Soil Liquefaction hazard areas	10	—	///	///	—	—	—	///	///	—	///	10
9.7 Shaking hazard areas	10	—	///	///	—	—	—	///	///	—	///	10
9.8 Ecologically important areas	10	—	—	///	—	///	///	—	///	///	///	10
9.9 Air pollution potential areas	9	—	///	///	—	///	///	—	///	—	///	10
9.10 Water pollution potential areas	9	—	—	///	///	///	///	—	///	—	///	10
9.11 Noise pollution potential areas	10	—	///	///	—	///	///	—	///	—	///	10

\*NEC = Not exclusively coded

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**APPENDIX IV**  
**RESULTS OF SECOND RANKING OF LAND USE**  
**INFORMATION VARIABLES**

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LAND USE MANAGEMENT INFORMATION SYSTEM  
(LUMIS)

A Possible List of Data Items for Possible Inclusion in the System

I. Cultural Data Items (These items represent man oriented activities, structures, or modifications visible on the landscape.)\*

	MEDIAN	Importance Levels										N
		Not Important	Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	
		1	2	3	4	5	6	7	8	9	10	
<b>1.0 RESIDENTIAL</b>												
1.1 Household units	10										///	9
1.2 Group quarters	8										///	9
1.3 Residential hotels	7										///	9
1.4 Mobile home parks or courts	8										///	9
1.5 Transient lodgings	7										///	9
1.6 Other residential, NEC*	7										///	9
<b>2.0 MANUFACTURING</b>												
2.1 Food & kindred products-manufacturing	6											9
2.2 Textile mill products-manufacturing	5											9
2.3 Apparel & other finished products made from fabrics, leather, and similar materials-manufacturing	5											9
2.4 Lumber & wood products (except furniture)-manufacturing	5											9
2.5 Furniture & fixtures-manufacturing	5											9
2.6 Paper & allied products-manufacturing	5											9
2.7 Printing, publishing, & allied industries	5											9

\*NOTE: Refer to U.S. Urban Renewal Administration & Bureau of Public Roads, Standard Land Use Coding Manual (Washington: The Bureau, 1965), for more detailed descriptions of land use activities with each of these classifications. Where possible LUMIS Staff will use the extremely detailed (fourth digit) classification (see item 1.0) from the aerial photography & other data sources. However, our listing here has been kept to just the more gross two digit classification level for purposes of determining the relative importance of types of data items to our users. (NEC=Not exclusively coded)

LUMIS (cont.)

	MEDIAN	Importance Levels										N
		Not Important	Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	Very Important	
		1	2	3	4	5	6	7	8	9	10	
2.8 Chemical & allied products	6										///	11
2.9 Petroleum refining and related industries	7										///	11
<b>3.0 MANUFACTURING (cont.)</b>												
3.1 Rubber & miscellaneous plastic products	6											11
3.2 Stone, clay, & glass products-manufacturing	6											11
3.3 Primary metal industries	6											11
3.4 Fabricated metal products-manufacturing	6											11
3.5 Professional, scientific, & controlling instruments; photographic & optical goods; watches & clocks-manufacturing	6											11
3.9 Miscellaneous manufacturing NEC*	5.5											10
<b>4.0 TRANSPORTATION, COMMUNICATION, &amp; UTILITIES</b>												
4.1 Railroad, rapid rail transit, & street railway transportation	10										///	11
4.2 Motor vehicle transportation	10										///	11
4.3 Aircraft transportation	10										///	11
4.4 Marine craft transportation	10										///	11
4.5 Highway & street right-of-way	10										///	11
4.6 Automobile parking	10										///	11
4.7 Communication	10										///	11
4.8 Utilities	10										///	11
4.9 Other transportation, communication, & utilities, NEC*	10										///	11
4.10 Bike path right-of-way	8										///	11

\*NEC = Not exclusively coded

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IUMIS (cont.)

IMPORTS (cont.)		Importance Levels											
		Not	Important			Important			Very Important				
		MEDIAN	1	2	3	4	5	6	7	8	9	10	R
<b>5.0 TRADE</b>													
5.1	Wholesale trade	7	—	—	L	L	L	U	U	—	L	—	11
5.2	Retail trade-building materials, hardware, & farm equipment	6	—	—	L	L	L	U	U	—	L	L	11
5.3	Retail trade-general merchandise	7	—	—	L	L	L	U	U	—	L	L	11
5.4	Retail trade-food	7	—	—	L	L	L	U	U	—	L	L	11
5.5	Retail trade-automotive, marine craft, aircraft, & accessories	7	—	—	L	L	L	U	U	—	L	L	11
5.6	Retail trade-apparel & accessories	7	—	—	L	L	L	U	U	—	L	L	11
5.7	Retail trade-furniture, home furnishing, and equipment	6	—	—	L	L	L	U	U	—	L	L	10
5.8	Retail trade-eating & drinking	6	—	—	L	L	L	U	U	—	L	L	11
5.9	Other retail trade, NEC*	6	—	—	L	L	L	U	U	—	L	L	11
<b>6.0 SERVICES</b>													
6.1	Finance, insurance, & real estate services	6	—	—	L	L	L	U	U	—	L	—	11
6.2	Personal services	6	—	—	L	L	L	U	U	—	L	—	11
6.3	Business services	6	—	—	L	L	L	U	U	—	L	—	11
6.4	Repair services	6	—	—	L	L	U	U	U	—	L	—	11
6.5	Professional services	5	—	—	—	—	L	L	—	—	—	—	3
6.6	Contract construction services	6	—	—	L	L	U	U	U	L	L	L	11
6.7	Governmental services	6	—	—	L	L	L	U	U	—	—	U	11
6.8	Educational services	7	—	—	L	L	L	L	—	—	—	U	11
6.9	Miscellaneous services	5	—	—	L	L	U	U	U	—	L	—	11

IUMIS (cont.)

IMPORTS (Cont.)		Importance Levels										
		Not Important			Important			Very Important				
		1	2	3	4	5	6	7	8	9	10	
7.0	<u>CULTURAL, ENTERTAINMENT, &amp; RECREATIONAL</u>	MEDIAN										
7.1	Cultural activities & nature exhibitions	6		L		L	U		L		U	11
7.2	Public assembly	10		L		U	L				U	11
7.3	Amusements	9		L		L	U		L		U	11
7.4	Recreational activities	10				L	U		U		U	11
7.5	Recreation - group camps	10				U	L		U		U	11
7.6	Parks	10					L		U		U	11
7.9	Other cultural, entertainment, & recreational, NEC*	7				L	U	U	L		U	11
7.10	Theme Parks	10					U	U			L	11
7.11	Marinas	10		L			L		L		U	11
8.0	<u>RESOURCE PRODUCTION AND EXTRACTION</u>											
8.1	Agriculture (irrigated and non-irrigated)	7		L		L	U		L	L		11
8.2	Agricultural related activities	7		U			U		L	U		11
8.3	Forestry activities & related services	6		L		U	U		L		U	11
8.4	Fishing activities & related services	6		U		L	L		L	L		11
8.5	Refining activities & related services	8		U		L	U		L		U	11
8.6	Mining activities & related services	10		L			U		L	L		11
8.9	Other resource production & extraction NEC*	6		L			U		L		U	10
9.0	<u>UNDERDEVELOPED LAND AND WATER AREAS</u>											
9.1	Underdeveloped & unused land area (excluding noncommercial forest development)	10							L	L		11
9.2	Noncommercial forest development	10		L			L		L		U	11

\*NEC = Not exclusively coded

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IUMIS (cont.)

JUMIS (cont.)	Importance Levels											N
	Not Important	Important				Very Important						
	MEDIAN	1	2	3	4	5	6	7	8	9	10	
9.3 Water areas	10	—	—	L	—	—	L	—	L	—	III	11
9.4 Vacant floor area	10	—	—	L	—	—	L	II	—	—	III	11
9.5 Under construction	10	—	—	II	—	—	L	L	—	—	III	11
9.9 Other underdeveloped land & water areas, NEC*	10	—	—	II	—	—	L	—	L	—	III	11
10.0 PUBLIC FACILITIES												
10.1 Fire protection	10	—	—	—	—	—	II	L	—	—	III	11
10.2 Police protection	10	—	—	—	—	—	II	L	—	—	III	11
10.3 Flood control	10	—	—	—	—	—	L	L	—	—	III	11
10.4 Municipal water district	10	—	—	L	—	—	L	L	—	—	III	11
10.5 Waste water disposal (Liquid sewage treatment)	10	—	—	L	—	—	L	L	—	—	III	11
10.6 Solid waste disposal (Land fill, etc.)	10	—	—	L	—	—	—	II	—	—	III	11
10.7 Educational facilities	10	—	—	L	—	—	—	L	—	—	III	11
10.8 Pipelines	10	—	—	L	L	—	L	L	—	—	III	11
10.9 Observatory	6	L	—	II	—	—	L	II	L	L	II	11
10.10 Museum	6	L	—	III	—	—	L	II	L	L	II	11
10.11 Electric & gas utilities	10	—	—	L	—	—	—	L	—	—	III	11
10.12 Other public facilities, NEC*	7	—	—	II	—	—	L	L	—	—	III	11
10.13 Arboretum/Botanical Garden	7	—	—	II	II	—	—	II	L	—	III	11
10.14 Vista Points and Roadside Rests	6	—	—	L	L	II	L	L	—	—	III	11
10.15 Hostels	6	—	—	II	II	L	L	II	L	—	II	11

II. Physical Data Items (These items represent those used to describe the natural environment.)

## 1.0 CLIMATE ON SEASONAL BASES

1.1 Air quality/Types of pollutants	10		L		L				II		III	11
1.2 Wind characteristics	10		L				L	L	L		III	10
1.3 Solar micro climate	7		L	L			L	II			III	9

IUMIS (cont.)

LUMHS (cont.)		Importance Levels											
	MEDIAN	Not Important			Important			Very Important				N	
		1	2	3	4	5	6	7	8	9	10		
1.4 Cloud cover	7	—	—	—	—	—	—	—	—	—	—	10	
1.5 Precipitation	8.5	—	—	—	—	—	—	—	—	—	—	10	
1.6 Fog	8	—	—	—	—	—	—	—	—	—	—	10	
1.7 Temperature	7	—	—	—	—	—	—	—	—	—	—	10	
2.0 <u>GEOLOGY</u>													
2.1 Fractures	10	—	—	—	—	—	—	—	—	—	—	10	
2.2 Types of sand & rock	10	—	—	—	—	—	—	—	—	—	—	10	
2.3 bedrock outcrops	10	—	—	—	—	—	—	—	—	—	—	10	
2.4 bedrock type	10	—	—	—	—	—	—	—	—	—	—	10	
2.5 Depth of bedrock	10	—	—	—	—	—	—	—	—	—	—	10	
3.0 <u>PHYSIOGRAPHY</u>													
3.1 Anticline	6	—	—	—	—	—	—	—	—	—	—	10	
3.2 Syncline	6	—	—	—	—	—	—	—	—	—	—	10	
3.3 Fault	10	—	—	—	—	—	—	—	—	—	—	10	
3.4 Lineaments	8	—	—	—	—	—	—	—	—	—	—	10	
3.5 Elevation	10	—	—	—	—	—	—	—	—	—	—	10	
3.6 Slope	10	—	—	—	—	—	—	—	—	—	—	10	
3.7 Drainage	10	—	—	—	—	—	—	—	—	—	—	10	
3.8 Landform type	10	—	—	—	—	—	—	—	—	—	—	10	
3.9 Scenic quality	10	—	—	—	—	—	—	—	—	—	—	10	
3.10 Aspect	7.5	—	—	—	—	—	—	—	—	—	—	10	
4.0 <u>HYDROLOGY</u>													
4.1 Fresh water supply	10	—	—	—	—	—	—	—	—	—	—	10	
4.2 Water sheds	10	—	—	—	—	—	—	—	—	—	—	10	
4.3 Aquifers	10	—	—	—	—	—	—	—	—	—	—	10	
4.4 Drainage basins	10	—	—	—	—	—	—	—	—	—	—	10	
4.5 Lakes	10	—	—	—	—	—	—	—	—	—	—	10	

\*NEC = Not exclusively coded

## LUMIS (cont.)

	MEDIAN	Not Important			Importance Levels			Very Important			N
		1	2	3	4	5	6	7	8	9	
4.6 Rivers, streams	10		L			L				PHI III	10
4.7 Wetlands	10		L			L				PHI II	10
4.8 Springs	10		L			U				PHI II	10
4.9 Waterfalls	10		L	U					L	PHI I	10
4.10 Flood (potential)	10		L			L				PHI III	10
4.11 Water quantity	10		L			L				PHI III	10
4.12 Water quality	10		L			L				PHI III	10
4.13 Dissolved & suspended solids	10		L			U				PHI II	10
4.14 Shoreline type (use)	10		L	L					L	PHI II	10
4.15 Shoreline quality	10		L	L				L	L	PHI I	10
4.16 Water feature	10		L	L		L			L	PHI I	10
<b>5.0 URBANITY</b>											
5.1 Soil porosity	10		L				L	U		PHI I	10
5.2 Soil types	10		L					L	L	PHI II	10
5.3 Soil depth	8.5		L			L	L	U		PHI	10
5.4 Foundation condition	8.5		L			L	L	U		PHI	10
5.5 Erosion factor	10		L				L	L		PHI II	10
<b>6.0 VEGETATION</b>											
6.1 Coastal sage scrub	10		L			U		L		PHI I	10
6.2 Chaparral	10		L			U		L		PHI I	10
6.3 Dry forest	10		L			U				PHI II	10
6.4 Montane coniferous forest	10		L			U				PHI II	10
6.5 Desert woodland	10		L			U				PHI II	10
6.6 High desert vegetation	10		L			U				PHI II	10
6.7 Grasslands	10		L			U		L		PHI I	10
6.8 Barren	10		L			U		L		PHI I	10
6.9 Riverine vegetation	10		L			U				PHI II	10

## LUMIS (cont.)

IDMIS (cont.)	Importance Levels										N	
	Not Important			Important			Very Important					
	MEDIAN	1	2	3	4	5	6	7	8	9	10	
<u>7.0 WILD LIFE ON SEASONAL BASIS</u>												
7.1 Mammals	6	—	L	L	L	U	—	L	—	—	U	10
7.2 Birds	6	—	L	L	L	U	—	L	—	—	U	10
7.3 Reptiles	6	—	L	L	L	U	—	L	—	—	U	10
7.4 Insects	6	—	L	L	L	U	—	L	—	—	U	10
7.5 Marine life (fish, etc.)	8.5	—	L	L	—	L	—	U	—	—	PHI	10
<u>8.0 OTHER IMPORTANT CHARACTERISTICS</u>												
8.1 Natural & man made edges & barriers	9.5	—	L	—	—	—	L	L	L	L	PHI	10
8.2 Aesthetic value	10	—	L	L	—	—	—	L	—	—	PHI U	10
<u>9.0 SPECIALIZED PHYSICAL DATA</u>												
<u>PLAN MAP AREAS</u>												
9.1 Mountain fire districts	10	—	L	L	—	—	—	L	—	—	PHI U	10
9.2 Mineral resources	10	—	L	—	—	U	—	—	—	—	PHI U	10
9.3 Inundation areas	10	—	L	—	—	—	L	—	L	—	PHI U	10
9.4 Flood areas	10	—	L	—	—	—	L	—	L	—	PHI U	10
9.5 Erosion hazards	10	—	L	—	—	—	L	—	—	L	PHI U	10
9.6 Soil Liquefaction hazard areas	10	—	L	—	—	—	L	—	—	L	PHI U	10
9.7 Shaking hazard areas	10	—	L	—	—	—	L	—	—	L	PHI U	10
9.8 Ecologically important areas	10	—	L	—	—	—	L	—	L	—	PHI U	10
9.9 Air pollution potential areas	10	—	L	—	—	—	L	—	—	—	PHI U	10
9.10 Water pollution potential areas	10	—	L	—	—	—	L	—	L	—	PHI U	10
9.11 Noise pollution potential areas	10	—	L	—	—	—	L	—	L	—	PHI U	10

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